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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/542,672	**Applicant(s)** FRANZ ET AL.	
	Examiner MEKONEN BEKELE	**Art Unit** 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 15-34 are pending in this application.

Priority

2. Acknowledgement is made of application's claim for foreign priority under 35 U.S.C. 119 (a)-(d) based on the Germany patent application No.10301898.0 filed on 01/17/2003.

Drawings

3. The drawings are filed on 07/18/2005, are accepted for examination

Response to Argument

4. Applicants' response to the last Office Action, filed, on 10/09/2008 has been entered and made of record.

5. Applicant's arguments filed on 10/09/2008 with respect to claims 15-34 have been fully considered, but they are not persuasive, see discussion below.

a) In order to overcome the rejection under 35 U.S.C. 101, the applicant amended the claims 28-34 by changing the term *"a computer program excitable on a computer"* to " *A computer readable medium having a computer program executable on a computer*". However, the above amendment is not sufficient to overcome the rejection under 35 U.S.C. 101, and invention is still directed to non –statuary subject matter for the following reasons:

Claim 28 define a computer program embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that

reason. Specifically the applicant's specification does not define or exemplify the computer readable medium or memory as statutory tangible products such as a hard drive, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) etc.

Examiner applies above argument to claims 29-34 depend from claim 28.

b) At page 9, claims 15,22 and 28, applicant argue that Szeliski does not identically describe (or suggest) the feature of "*a frequency of the gray values of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant; and the gray value density of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant.*"

As to the above argument [b], examiner respectfully disagrees with the applicant because:

i) Firstly, Szeliski teaches a histogram equalization process involving creation of a count of number of pixels sets having the <u>same</u> summed brightness level (page 3, lines 20 to 24). From this statement it is clear that the term "count" is equivalent to the term frequency.

Secondly, Szeliski teaches "the characteristic pixel values are preferably any appropriate measure of the pixel brightness level (also known as the luminous intensity value) exhibited by a pixel. For example, if the images are black and white, the pixel gray level could be used. If color images are involved, the Y-luminance channel could be used (page 3 lines 5-10). Therefore, Szeliski teaches both luminous intensity value and gray level intensity value. From above two arguments it is clear that the count of number of pixels sets having the <u>same</u> summed

brightness level correspond to the "frequency *of the gray values". Now back to the whole claim limitation "a frequency of the gray values of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant". This claim limitation is anticipated by* Szeliski as follows:

a frequency of the gray values (**a count of number of pixels sets having the same summed brightness level or the pixel gray level)** of at least a part of the histogram of image signals(**FIG. 8A is a graph plotting the histogram for the summed brightness levels**) from the at least one image sensor(**page11 line31 and page 12 lines 1-3, *a nice property of summed brightness is that it is a monotonic function of the true luminance, as long as each of the sensor responses is itself monotonic***) of the at least one part of the registered scene(***Figs. 1A through 1 C:***) is approximately constant(**the count of number of each pixels set is a constant)**

b) At pages 9 and 10, claims 15, 22 and 28, applicant argue that Szeliski does not identically describe (or suggest) the feature of " *the gray value density of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant*."

As to the above argument [b], examiner respectfully disagrees with the applicant for the following reasons:

The aim of a histogram equalization is that obtaining an equally-gray- value distribution density. In mathematic terms the density is the slope of the cumulative distribution function. Therefore, the derivative of the **cumulative distribution** function (CDF) gives the probability density **function** (**PDF**) or the gray value density function of the histogram. Based on the above

discussion, the gray value- density corresponds to the slope of the **cumulative distribution** function (CDF). In addition the slope of CDF graph (**see Fig. 8B**) is approximately constant since the graph is approximately linear. Therefore, the *gray value density is also approximately constant.*

Now back to the whole clime limitation "the gray value density of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant". This claim limitation is anticipated by Szeliski as follows:

*the gray value density(***slope of the cumulative distribution function (CDF)***) of at least a part of the histogram of image signals(***FIG. 8A is a graph plotting the histogram for the summed brightness levels***)) from the at least one image sensor* **(page11 line31 and page 12 lines 1-3, *a nice property of summed brightness is that it is a monotonic function of the true luminance, as long as each of the sensor responses is itself monotonic)*** *of the at least one part of the registered scene(**Figs. 1A through 1** C) is approximately constant* **(the slope of the cumulative distribution function (CDF**) is constant**).**

c) At page 9, claims 15, 22 and 28, applicant argue that the frequency of a gray value, in accordance with the present application, designates the number of pixels within one camera image that have this gray value based on the total number of pixels, and that a constant frequency of the gray values within a histogram of an image is referred to as a uniformly distributed histogram.

As to the above argument [c], examiner respectfully disagrees with the applicant because claims 15, 22 and 28 did not include the above limitation. Examiner would like to

point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. Ir re Sporck, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968).

d) At page 10, claims 15, 22 and 28, applicant argue that the gray value density designates the sum of frequencies h(gi) of gray values gi in an interval Δg of gray values in reference to interval Δg

As to the above argument [d], examiner respectfully disagrees with the applicant because claims 15, 22 and 28 did not include the above limitation. Examiner would like to point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. Ir re Sporck, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968)

e) At page 10, claims 22 and 28, applicant argue that Szeliski does not disclose the feature of adjusting the characteristic curve so that a frequency of the gray values of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant, and the gray value density of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene constant";

As to the above argument [e], examiner respectfully disagrees with the applicant because Szeliski teaches histogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. A cumulative distribution function is computed using the summed brightness histogram to determine the uniform distribution. Further if the images are black and white, then the standard pixel gray levels would preferably be used as the measure of pixel brightness (see page 16 lines 26-28).

The characteristic curve of the exposure sensitivity ***corresponds to the cumulative distribution function curve (Fig.9A),*** *and the characteristic curve of the exposure sensitivity corresponds to Fig. 9C and which is obtained by blending the cumulative distribution function Fig. 9A with the straight line function Fig. 1B (page 15 lines 24-25)*

Therefore, as best understood by the examiner, the adjustment of the characteristic curve is obtained *by blending the cumulative distribution function Fig. 9A with the straight line function).*

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> *Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.*

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer

efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361,31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

6. Claims 28-34 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 28 defines a computer program executable on a computer embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" - Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35U.S.C.102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 15-34 are rejected under 35 U.S.C. 102(b) as being anticipated by SZELISKI, patent No. WO 0078038 A1 published on December 21, 2000.

As to claim 15, Szeliski teaches A method for adjusting a characteristic curve of an exposure sensitivity (**Abstract, A system and method for manipulating a set of images of a static scene captured at different exposures to yield a composite image with improved uniformity in exposure and tone. The cumulative distribution function is then used to determine new pixel brightness levels for use in generating the composite image.** The characteristic curve corresponds **to the cumulative distribution function curve (see Fig.8A)) of at least one pixel of at least one image sensor (Abstract: desired composite image can be produced by summing the pixel brightness levels across the multiple images captured by adjusting the up and down exposure sensors of the camera 55.** The image sensor **corresponds to the exposure sensors of the camera**), in a motor vehicle, the characteristic curve being formed in segments of functions **(Abstract: histogram equalization involves creating a count of the number of pixels sets having the same summed brightness level. From this count, a cumulative distribution function is computed. Thus**

histogram equalization generates a segmented distribution function based on the counts), the method comprising:

adjusting the characteristic curve of the exposure sensitivity as a function of image signals (**page 13 lines 8-18, histogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. Thus distribution function is adjusted based on the image signal produced by the camera 26)** from at least a part of the scene registered (**Figs. 1A-IC: FIGS. 1A through 1C are images depicting an office scene captured at different exposure settings)** by the at least one image sensor **(page 8 lines 8-18, a camera 55 capable of capturing a sequence of images 56 with different exposures by adjusting its the up and down the exposure sensors.** The image sensor corresponds **to the up and down exposure sensors of the Kodak DCS-488 camera (see page 1 line 25))** so that at least one of the following is satisfied: a frequency of the gray values of at least a part of the histogram of image **(page 3 lines 5-18 and lines 28-22, the histogram equalization involves creating a count of the number of pixels sets having the same summed brightness level. If the images are black and white, the pixel gray level could be used.** The

frequency of the gray values ***corresponds to the number of pixels sets having the same summed brightness level)*** *signals from the at least one image sensor(page 1 lines 21-25, the two stop up and down exposure sensors of the Kodak camera) of the at least one part of the registered scene* **(Fig. 1A-1C: FIGS. 1A through 1C are images depicting an office scene captured at different exposure settings***) is approximately constant* ***(page 1 lines 10-11, The office scene captured at different exposure settings are static (constant) scene taken at different exposures)****; and the gray value density(****Fig. 9A, the slope of the characteristic curve)*** *of at least a part of the histogram of image signals from the at least one image sensor of*

the at least one part of the registered scene is approximately constant(**Fig. 9A. the slope of the characteristic curve is approximately).**

As to claim 16, Szeliski teaches the characteristic curve of the exposure sensitivity is adjusted as a function of image signals **(page 14 lines 16-17, a cumulative distribution function is computed using the summed brightness histogram where the histogram function is obtained from the signal generated by the camera 56.** The characteristic curve of the exposure sensitivity **corresponds to the cumulative distribution function)** from at least a part of the scene registered by the at least one image sensor **(Fig. 1A-IC, page 4 lines 23-24, 1A through 1C are images depicting an office scene captured at different exposure settings.** The image sensor **corresponds to the up and down exposure sensors of the Kodak DCS-400 camera (see page 1 line 25)),** so that, when a gray value wedge having two segments with different gradients of the gray values is registered as the scene **(Fig. 1A-IC, page 4 lines 23-24, the office scene captured at different exposure settings have different gradients of the gray values)** the at least one image sensor generates an image nearly free of apparent contours (**Fig. 6, page 5 lines 8-11, FIG. 6 is a composite image produced from the bracketed images(set of images of a static scene captured at different exposures) of the office scene of FIGS. 1A through 1C that exhibits a more uniform exposure and tone than any of the bracket images.** The image nearly free of apparent contours **corresponds to the composite image Fig. 6).**

As to claim 17, Szeliski teaches the characteristic curve of the exposure sensitivity **(Fig. 9A, page 5 lines 23, the graph of a cumulative distribution function)** is adjusted as a function of a determined optimal characteristic curve of the exposure sensitivity (**Figs. 9A -9C,**

page 5 lines 27-29, a blended cumulative distribution function FIG. 9C is produced by blending the cumulative distribution function FIG. 9A with the straight line function FIG. 9B. The determined optimal characteristic curve of the exposure sensitivity **corresponds to blended cumulative distribution function FIG. 9C)**, including a determined characteristic curve of the exposure sensitivity which is optimal according to information theory **(Fig.1B, a straight line distribution function generates uniform distribution. Thus the straight line distribution function corresponds to** the theoretical distribution function optimal according to information theory), at least one of the optimal characteristic curve of the exposure sensitivity **(Fig.9c)** and the characteristic curve of the exposure sensitivity which is optimal according to information theory **(Fig, 9B)** being determined as a function of image signals (**Figs. 9A-9C, the Figs. 9A through 9C are plotted as a function of image signal generated by the camera56**) from the at least one image sensor **(page 5 line 31 and page 6 lines1-2, Fig. 18A is a composite image produced from the bracketed images of the office scene of FIGS. 1A through 1C using the up and down exposure sensors of the Kodak DCS-488 camera *(see page 1 line 25).*** *The image sensor corresponds to* **the up and down exposure sensors of the camera 56).**

*As to claims 18, Szeliski teaches determining the optimal characteristic curve of the exposure sensitivity as a function of a histogram of the gray values **(page 13 lines 8-9, page 14 lines 16-17, histogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. A cumulative distribution function is computed using the summed brightness histogram to determine the uniform distribution. Further if the images are black and white, then the standard pixel gray levels would preferably be used as the measure of pixel brightness (see page 16 lines 26-28).** The*

characteristic curve of the exposure sensitivity corresponds to ***the cumulative distribution function curve (Fig.9A)****, and the optimal characteristic curve of the exposure sensitivity* ***corresponds to Fig. 9C and which is obtained by blending the cumulative distribution function Fig. 9A with the straight line function Fig. 1B (page 15 lines 24-25****)of at least one image and/or of at least one image detail* ***(Fig. 1A-IC: FIGS. 1A through 1C are images depicting an office scene captured at different exposure settings. Thus FIGS. 1A through1C have different image detail, and the optimal (page 15 line 27-29));***

*approximating the characteristic curve of the exposure sensitivity (****page 15 lines 24-25, blending the cumulative distribution function Fig. 9A with the straight line function Fig. 1B)*** *to the determined optimal characteristic curve of the exposure sensitivity* (***page 16 lines 4-6 the blending process is carried out in order to determine the optimal cumulative distribution function (Fig.9C) that represent the composite image (Fig.18B) having the best possible improvement in exposure and tone uniformity****. The optimal characteristic curve of the exposure sensitivity* ***corresponds to the blended cumulative distribution function Fig. 9C),*** *including approximation of the characteristic curve of the exposure sensitivity to the determined optional characteristic curve of the exposure sensitivity through at least one numerical approximation method and/or at least one segmenting method* (***Fig. 7B shows the steps of obtaining the optimal cumulative distribution function using numerical approximation that includes Normalization, Curve fitting, Histogram Equalization, Partial Equalization***).

As to claim19, Szeliski teaches at least one of the gain (Fig. 9A, the slope the cumulative distribution function graph that measure the uniformity of an image), *the offset, the integration time and at least one additional parameter* **(page 14 lines 16-17, the characteristic pixels**

value which is pixel brightness values of an image) *for adjusting the characteristic curve of the exposure sensitivity* **(page 14 lines 28-22, see also step 714, the pixel brightness values are adjuster in ordered to approximate the cumulative distribution function.** *The characteristic curve of the exposure sensitivity* **corresponds to the cumulative distribution function graph)** *of the at least one pixel of the at least one image sensor* **(the *approximation is carried out by adjusting exposure and tone of the set of images (Figs. 1A-1C) captured at different exposure using the exposure sensors of the Kodak CDCS-488 camera (see page 1 line 25)*** *is adjusted, the at least one additional parameter for adjusting the characteristic curve of the exposure sensitivity being at least one of (i) at least one parameter for adjusting the number of segments of the characteristic curve of the exposure sensitivity* **(Fig. 7B, adjusting the summed e brightness values of values of an image),** *(ii) at least one parameter for adjusting the position of the segments of the characteristic curve of the exposure sensitivity, (iii) at least one parameter for adjusting the size of the segments of the characteristic curve of the exposure sensitivity, and (iv) at least one parameter for adjusting the at least one function* ***(page 15 lines 18-28, blend the normalized cumulative distribution function with a straight line function. The at least one function corresponds to the linear function (Fig. 9B), at least one parameter corresponds to the pixel brightness values of an image that t is used to approximate a uniform distribution of cumulative distribution function (page 13 lines 9-10)).***

As to claim 20, Szeliski teaches at least one of the functions is a linear function ***(see Fig.9B)***

As to claim 21, Szeliski teaches the characteristic curve of the exposure sensitivity of the at least one pixel of the at least one image sensor is adjusted as a function of image signals **(page 13 lines 8-18,1-1istogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. Thus, distribution function is adjusted based on the image signal generated by camera 56)** from at least two image sensors, including at least one stereo camera (**page 1 lines 21- 25, FIGS. 1A through 1C show three images of an office desk and window, taken at different exposures. Specifically, these images were captured with a Kodak DCS-40 camera, by adjusting the exposure up and down by two "stops".** The two image sensors **corresponds the Kodak up and down exposure sensors**, and the stereo camera corresponds *to* ***the Kodak DCS-40 camera*****).**

As to claim 22, Szeliski teaches A processing unit **(Fig.2 element 21)** for generating at least one adjustment signal (Fig.9B) for adjusting the characteristic curve of the exposure sensitivity **(Fig. 9A, the cumulative distribution function curve is**
adjusted **based on the image signal generated by the camera.** The characteristic curve of the exposure sensitivity **corresponds to the cumulative distribution function)** of at least one pixel of at least one image sensor (**Abstract: desired composite image can be produced by summing the pixel brightness levels across the multiple images captured by adjusting the exposure of a camera 55**. The image sensor corresponds to **the up and down of exposure sensors of the camera),** including in a motor vehicle, the characteristic curve *being formed in segments of functions* ***(Fig. 9A),*** *including of linear functions* ***(Fig. 9B),*** *comprising:*

an arrangement to generate the at least one adjustment signal to adjust the characteristic curve of the exposure sensitivity as a function of image signals **(page 13 lines 8-**

10,histogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. Thus, distribution function is adjusted based on the image signal generated by image signal of the camera) from at least a part of the scene (**Figs. 1A -1C: show an office scene captured at different exposure settings)** registered by the at least one image sensor **(see page 1 line 25, the images are captured at different exposure using the up and down exposure sensors of the Kodak DCS-400 camera. The least one image sensor corresponds to the up and down exposure sensors of the camera)** so that at least one of a frequency of the gray values of at least a part of the histogram of image signals from the at least one image sensor of the at least one part of the registered scene is approximately constant **(page 3 lines 5-10 and lines 20-22, the histogram equalization involves creating a count of the number of pixels sets having the same summed brightness level. If the images are black and white, the pixel gray level could be used.** The frequency of the gray values **corresponds to the number of pixels sets having the same summed brightness level)**, and a gray value density **(Fig. 9A: the slope the cumulative distribution function curve corresponds** to the gray value density**)** of the of at least a part of the histogram of image signals from the at least one part of the registered scene is approximately constant (**the slope the cumulative distribution function (Fig, 9A) of office scene images (Figs. 1A -1C) is approximately constant).**

As to claim 23, Szeliski teaches the processing unit **(Fig.2 element 21)** generates the at least one adjustment signal to adjust the characteristic curve of the exposure sensitivity (**page 14 lines 16-17, a cumulative distribution function is computed using the summed brightness histogram where brightness histogram is a function of input images 56 signals**. The characteristic curve of the exposure sensitivity corresponds **to the cumulative**

distribution function) as a function of image signals from at least a part of the scene registered by the at least one image sensor **(Fig. 1A-1C, page 4 lines 23-24, 1A through 1C are images depicting an office scene captured at different exposure settings. The image sensor corresponds to the up and down exposure sensors of the Kodak DCS-488 camera (see page 1 line 25)),** so that, when a gray value wedge having two segments with different gradients of the gray values is registered as the scene **(Fig. 1A-1C, page 4 lines 23-24, the office scene captured at different exposure settings have different gradients of the gray values)** the at least one image sensor generates an image nearly free of apparent contours **(Fig. 6, page 5 lines 8-11, FIG. 6 is a composite image produced from the bracketed images(set of images of a static scene captured at different exposures) of the office scene of FIGS. 1A through 1C that exhibits a more uniform exposure and tone than any of the bracket images.** The image nearly free of apparent contours **corresponds to the composite image Fig. 6)**

Regarding claims 24-26 and 27, all claimed limitation except the processing unit are set forth and rejected as per discussion for claims17-19 and 21 respectively. And regarding the processing unit of claims 24-27 **see Fig. 2 element 21 and which is configured to process the cumulative distribution function of the office scene captured at different exposure settings (Figs. 1A –1C).**

As to claim 28, Szeliski teaches A computer program executable on a computer (**Fig. 2 page 7 lines 5-18, and page 23 claim 13),** comprising:

a program code arrangement (page 23 claim 13) for adjusting a characteristic curve of an exposure sensitivity **(Abstract, A system and method for manipulating a set of images**

of a static scene captured at different exposures to yield a composite image with improved uniformity in exposure and tone. The cumulative distribution function is then used to determine new pixel brightness levels for use in generating the composite image. The characteristic curve **corresponds to the cumulative distribution function curve (see Fig.8A))** of at least one pixel of at least one image sensor **(Abstract: desired composite image can be produced by summing the pixel brightness levels across the multiple images captured by adjusting the exposure of a camera 55.** The image sensor **corresponds to the exposure sensors of the camera),** in a motor vehicle, the characteristic curve being formed in segments of functions **(Abstract: the histogram equalization involves creating a count of the number of pixels sets having the same summed brightness level. From this count, a cumulative distribution function is computed. Thus histogram equalization generates a segmented distribution function based on the counts),** by performing the following:

adjusting the characteristic curve of the exposure sensitivity as a function of image signals **(page 13 lines 8-18, histogram equalization is a process for mapping pixel brightness values of an image to approximate a uniform distribution. Thus distribution function is adjusted based on the image signal generated by the camera 56)** from at least a part of the scene registered **(Figs. 1A-IC: FIGS. 1A through 1C are images depicting an office scene captured at different exposure settings)** by the at least one image sensor **(page 8 lines 8-18, a camera 55 capable of capturing a sequence of images 56.** The image sensor **corresponds to the up and down exposure senses of the camera56**).

Regarding claims 29-34, all claimed limitation are set forth and rejected as per discussion for claims16-21

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Mekonen Bekele whose telephone number is 571-270-3915. The examiner can normally be reached on Monday -Friday from 8:00AM to 5:50 PM Eastern Time. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor AHMED SAMIR can be reached on (571)272-7413. The fax phone number for the organization where the application or proceeding is assigned is 571-237-8300. Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished application is available through Privet PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have question on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217-919 (tool-free)

/MEKONEN BEKELE/
Examiner, Art Unit 2624
January 3, 2009

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624